REMARKS

This application has been carefully reviewed in light of the Office Action dated June 7, 2006. Claims 22-26 and 28-31 remain in this application. Claims 22 and 23 are the independent Claims. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Specification Objection

The amendment filed February 22, 2005, was objected to under U.S.C. 132 for introducing new matter. In response, independent Claims 22 and 23 were have been amended, and the objected new matter have been deleted. Reconsideration and withdrawal of this objection are thus respectfully requested.

Non-Art Based Rejections

Claims 22-31 were rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. In particular, the Office Action states that Claims 22 and 23 recite the associated capacitor (Claim 22) or first stage capacitor (Claim 23) having a voltage dependant capacitance under a given applied voltage and having a different structure, a low resistance and a large area in comparison with at least one of the other capacitors of the subsequent stages, and that feature is new matter. Applicant respectfully traverses that rejection with respect to independent Claim 22.

The feature "said associated capacitor has a voltage dependent capacitance under a given applied voltage" recited in independent Claim 22 is supported in the Specification. In particular, lines 6-12 of page 12 of Specification recites the following:

> In this way, the sum of the gate resistance Rg and the N-well resistance Rn/w is reduced to decrease undesirable frequency response that would be otherwise caused by the resistances Rg and Rn/w. Accordingly, although the capacitance of each MOS capacitor is voltage dependent, the frequency response of the MOS capacitor is improved. This is the case even for high frequency operation of the charge pump circuit, so that the step-up performance of the charge pump circuit is secured.

Lines 1-6 of page 14 of the Specification further recites the following:

> Effective application of the inventive MOS capacitor to a charge pump circuit is to use the MOS capacitor in the early stages of the circuit as shown in Fig.1 where the capacitance C still has a voltage dependence under a given applied voltage, i.e. the Vg-C characteristic is not saturated yet. Therefore, it is preferred to use the inventive MOS capacitor in the first stage of the charge pump circuit where the capacitor is subjected to a low voltage.

Accordingly, Applicant respectfully submits that the feature "said associated capacitor has a voltage dependent capacitance under a given applied voltage" is supported at least by the above cited portions of the Specification.

Moreover, the feature that the associated capacitor having low resistance is also supported in lines 6-12 of page 12 of Specification recited above.

Regarding the feature that the associated capacitor having a different structure and a large area in comparison with at least one of the other capacitors of the subsequent stages, that features is also supported in the Specification. Lines 22-27 of page 13 of the Specification recites the following:

> Incidentally, provision of such extra N^+ regions results in a decrease in effective area of the gate electrode so that the area of the MOS capacitor must be increased by that amount used up for the extra N^+ regions in order

> to secure the same capacity as a conventional one. To do this, capacitors in the later half stages of the charge pump circuit, especially one in the last stage, may have a different structure that that of an inventive MOS capacitor.

Accordingly, Applicant respectfully submits that the feature "said associated capacitor ...has a different structure, ... and a large area in comparison with at least one of the other said capacitors of the subsequent stages" is supported at least by the above cited portions of the Specification.

Independent Claim 22 is thus fully supported in Specification and comports to the rules of written description requirement under 35 U.S.C. § 112. Independent Claim 23 reciting similar features also comports to those rules. Accordingly, reconsideration and withdrawal of the above § 112 rejection are respectfully requested.

Art-Based Rejections

Claims 22-26 and 29-31 were rejected under 35 U.S.C. § 102(e) over Applicant's Prior Art (APA). APA was specified as Figures 1 and 4 of Specification. (*See, Office Action; Page 4, Para. 4).* Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Claims are Patentable Over the Cited References

The present application is generally directed to a semiconductor apparatus having a charge pump which includes MOS type capacitors .

As defined by amended independent Claim 22, a driver for driving a load with a secondary power supply voltage obtained by stepping a primary supply voltage level uses a charge pump circuit that has a multiplicity of stages. Each of the stages includes a switching element and a capacitor. An associated capacitor of the first stage of the charge pump circuit is energized by the one of the voltages impressed on the capacitors of the multiplicity of stages that is closest in value to the primary supply voltage level. The associated capacitor has a voltage dependent capacitance under a given applied voltage and has a different structure, a low resistance, and a large area in comparison with at least one of the other capacitors of the subsequent stages.

The applied reference does not disclose or suggest the above features of the present invention as defined by amended independent Claim 22. In particular, APA does not disclose or suggest, "said associated capacitor has a voltage dependent capacitance under a given applied voltage and has a different structure, a low resistance and a large area in comparison with at least one of the other said capacitors of the subsequent stages," as required by that claim.

APA is described in "Background of the Invention" of the Specification. In paragraph 4, page 2 of the Specification, it is set forth that:

> Thus, in forming a charge pump circuit on one semiconductor chip together with a low-voltage circuit (not shown), their capacitors C1-Cn-1 are mostly MOS capacitors, aligned in shape and size with other MOS transistors. Such MOS capacitors are described in detail below with reference to FIGS. 2 and 3."

The above citation of Specification demonstrates that APA teaches identical capacitors for the charge pump. Figures 2 and 3 illustrate a capacitor used for all capacitors in APA. Moreover, APA is silent regarding the first stage capacitor

having a lower internal resistance and a large area than the subsequent stages. The Office Action also does not assert that APA teaches those features.

Since the cited reference fails to disclose, teach or suggest the above features recited in amended independent Claim 22, that reference cannot be said to anticipate or render obvious the invention which is the subject matter of the claim. Accordingly, independent Claim 22 is believed to be in condition for allowance and such allowance is respectfully requested.

Applicant respectfully submits that amended independent Claim 23 is allowable for the least the same reasons as those discussed in connection with amended independent Claim 22.

The remaining claims depend either directly or indirectly from independent Claims 22 and 23, and recite additional features of the invention which are neither disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 785-4721 to discuss the steps necessary for placing the application in condition for allowance.

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If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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Date: October 6, 2006

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